

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously Presented) A microscope having at least one illumination beam and at least one detection beam path, characterized in that
 - each illumination beam path is provided with a focusing arrangement for producing an object illumination region which extends in the direction of an illumination axis of the illumination beam path and transversely thereto,
 - a detection direction of the at least one detection beam path is approximately orthogonal to the object illumination region, and
 - a mobile arrangement is provided for producing a relative movement between the object illumination region and an object to be studied and the mobile arrangement has at least one rotational axis corresponding substantially to the direction of gravity.
2. (Previously Presented) The microscope as claimed in claim 1, characterized in that the mobile arrangement can produce a rotational movement of the object and/or a displacement movement of the object.
3. (Previously Presented) The microscope as claimed in claim 1, characterized in that the mobile arrangement is designed to move the object while the object illumination region is essentially stationary.
4. (Previously Presented) The microscope as claimed in claim 1, characterized in that the mobile arrangement is designed to move the object illumination region while the object is essentially stationary.

5. (Previously Presented) The microscope as claimed in claim 1, characterized in that the at least one illumination beam path has a cylindrical lens for focusing the illumination light.
6. (Previously Presented) The microscope as claimed in claim 5, characterized in that the cylindrical lens can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis.
7. (Previously Presented) The microscope as claimed in claim 6, characterized in that the movement of the cylindrical lens is a high-frequency movement.
8. (Previously Presented) The microscope as claimed in claim 1, characterized in that scattered light or fluorescent light of one or more wavelengths is used.
9. (Previously Presented) The microscope as claimed in claim 1, characterized in that the illumination light beam is produced by a light source, which is a lamp or a laser, which provides light of one or more wavelengths.
10. (Previously Presented) The microscope as claimed in claim 1, characterized in that the object is to be held by a holder in a sample chamber, in which it can be moved along at least one direction.
11. (Previously Presented) The microscope as claimed in claim 1, characterized in that at least two illumination beam paths with essentially opposite illumination directions are provided for producing at least locally overlapping object illumination regions.
12. (Previously Presented) The microscope as claimed in claim 11, characterized in that the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region.

13. (Previously Presented) The microscope as claimed in claim 12, characterized in that the illumination light of the two illumination beam paths has a constant, adjustable phase.
14. (Previously Presented) The microscope as claimed in claim 1, characterized in that the at least one detection beam path has a detector, and in that the detector can be moved laterally with respect to the detection direction of the at least one detection beam path.
15. (Previously Presented) The microscope as claimed in claim 1, characterized in that the at least one detection beam path can be adapted so that the detection direction is approximately orthogonal to the object illumination region when the object illumination region is shifted.
16. (Currently Amended) A microscope having at least one illumination beam path and at least one detection beam path, characterized in that
each illumination beam path is provided with a focusing arrangement for producing a linear object illumination region which extends in the direction of an illumination axis of the illumination beam path,
a detection direction of the at least one detection beam path is approximately orthogonal to the linear object illumination region, and
at least one mobile arrangement is provided for producing a relative movement between the linear object illumination region and an object to be studied, wherein the linear object illumination region is essentially limited to one direction.
17. (Previously Presented) The microscope as claimed in claim 16, characterized in that the at least one mobile arrangement is designed to produce a relative movement between the object and the linear object illumination region essentially orthogonally to the illumination axis and the detection direction.

18. (Previously Presented) The microscope as claimed in claim 17, characterized in that the at least one mobile arrangement is designed to move the object in order to produce a relative movement.
19. (Previously Presented) The microscope as claimed in claim 17, characterized in that the at least one mobile arrangement is designed to move the at least one illumination beam path at least in the linear object illumination region provided by it, in order to produce the relative movement.
20. (Previously Presented) The microscope as claimed in claim 19, characterized in that the at least one mobile arrangement is designed to move the at least one detection beam path in accordance with the movement of the at least one illumination beam path, at least in its region near the object.
21. (Previously Presented) The microscope as claimed in claim 16, characterized in that the at least one detection beam path has a detector with a multiplicity of detector pixels.
22. (Previously Presented) The microscope as claimed in claim 21, characterized in that the number and positioning of the detector pixels of the detector are selected so that the at least one detection beam path projects a section of the object, illuminated by the at least one illumination beam path in the object illumination region, essentially fully onto the detector.
23. (Previously Presented) The microscope as claimed in claim 16, characterized in that the at least one mobile arrangement is designed to move the object to be studied essentially in the direction of the detection direction of the at least one detection beam path.
24. (Canceled)

25. (Currently Amended) A microscope having at least one illumination beam path and at least one detection beam path, characterized in that

each illumination beam path is provided with a focusing arrangement for producing an object illumination region which extends in the direction of an illumination axis of the illumination beam path and transversely thereto,

a detection direction of the at least one detection beam path is approximately orthogonal to the object illumination region,

a mobile arrangement is provided for producing a relative movement between the two-dimensional object illumination region and an object to be studied, and

the object is mounted on a holder, the holder being movable within a sample chamber, such that the mobile arrangement can produce a displacement movement of the object within the sample chamber.

26. (Currently Amended) The microscope as claimed in claim 25, characterized in that the mobile arrangement can produce a rotational movement of the object ~~and/or a displacement movement of the object.~~

27. (Previously Presented) The microscope as claimed in claim 25, characterized in that the mobile arrangement is designed to move the object while the object illumination region is essentially stationary.

28. (Previously Presented) The microscope as claimed in claim 25, characterized in that the mobile arrangement is designed to move the object illumination region while the object is essentially stationary.

29. (Previously Presented) The microscope as claimed in claim 25, characterized in that the at least one illumination beam path has a cylindrical lens for focusing the illumination light.

30. (Previously Presented) The microscope as claimed in claim 29, characterized in that the cylindrical lens can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis.
31. (Previously Presented) The microscope as claimed in claim 30, characterized in that the movement of the cylindrical lens is a high-frequency movement.
32. (Previously Presented) The microscope as claimed in claim 25, characterized in that scattered light or fluorescent light of one or more wavelengths is used.
33. (Previously Presented) The microscope as claimed in claim 25, characterized in that the illumination light beam is produced by a light source, which is a lamp or a laser, which provides light of one or more wavelengths.
34. (Previously Presented) The microscope as claimed in claim 25, wherein the holder is rotatable about an axis corresponding substantially to the direction of gravity.
35. (Previously Presented) The microscope as claimed in claim 25, characterized in that at least two illumination beam paths with essentially opposite illumination directions are provided for producing at least locally overlapping object illumination regions.
36. (Previously Presented) The microscope as claimed in claim 35, characterized in that the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region.
37. (Previously Presented) The microscope as claimed in claim 36, characterized in that the illumination light of the two illumination beam paths has a constant, adjustable phase.

38. (Previously Presented) The microscope as claimed in claim 25, characterized in that the at least one detection beam path has a detector, and in that the detector can be moved laterally with respect to the detection direction of the at least one detection beam path.
39. (Previously Presented) The microscope as claimed in claim 25, characterized in that the at least one detection beam path can be adapted so that the detection direction is approximately orthogonal to the object illumination region when the object illumination region is shifted.
40. (Previously Presented) The microscope as claimed in claim 25, wherein the object illumination region is substantially planar-shaped.
41. (Previously Presented) The microscope as claimed in claim 25, wherein the object illumination region is substantially linearly-shaped.
42. (Previously Presented) The microscope as claimed in claim 1, wherein the object illumination region is substantially planar-shaped.
43. (Previously Presented) The microscope as claimed in claim 1, wherein the object illumination region is substantially linearly-shaped.
44. (New) The microscope as claimed in claim 25, wherein the mobile arrangement provides at least one rotational axis being substantially perpendicular to said illumination axis and substantially perpendicular to said detection direction.
45. (New) The microscope as claimed in claim 1, wherein the at least one rotational axis is substantially perpendicular to said illumination axis and substantially perpendicular to said detection direction.